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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/566,991

02/22/2006

Satoshi Yamamoto

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OLIFF & BERRIDGE, PLC

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EXAMINER

MCNALLY, DANIEL

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/566,991	<b>Applicant(s)</b> YAMAMOTO ET AL.	
	<b>Examiner</b> DANIEL MCNALLY	<b>Art Unit</b> 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/2/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 discloses " $\Delta E$ " "is at most 0.3." " $\Delta E$ " appears to represent the color difference, but it is unclear how " $\Delta E$ " is calculated. Furthermore it is unclear if the value of 0.3 is a relatively large or small number for the color difference. It is assumed the applicant is trying to claim a small color difference. It is recommended the applicant clarify what " $\Delta E$ " is, how it is calculated, and what significance the value has. It should be noted that this language relating to the determination of " $\Delta E$ " must be defined in the claim from the disclosure in the specification so that it is clear what test was performed and how this change was measured.

### ***Claim Rejections - 35 USC § 102/103***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Joachimi et al [US2003/0130381].

Joachimi discloses a method of laser welding and composition of the materials laser welded. The method is a well known transmission laser welding method comprising providing a laser-transparent molded part, providing a laser-absorbing molded part, placing surfaces the transparent and absorbing parts in contact, heating the contacting surface by exposing a laser light through the laser-transparent part and onto the laser-absorbing part, the contacting surfaces of the parts melts, and upon cooling a weld is formed between the two parts. Joachimi discloses the laser-transparent part and the laser-absorbent part should have very similar color and surface quality, and further discloses the molded parts can have a natural-color, white, black or other color impression. Joachimi discloses forming the parts of a composition comprising 35-99.999 wt.% of a laser-transparent thermoplastic material and 0-0.30 wt.% preferably 0.1 to 20 wt.% of an additive, wherein the additive is a pigment. Joachimi provides a list of suitable pigments which includes titanium dioxide, which is a well known white pigment. When using the end points of the ranges provided by Joachimi, thermoplastic at 99.999 wt.% and pigment at 0.1wt.%, the pigment is about 0.1 parts by weight and the thermoplastic is about 100 parts by weight. One of ordinary skill in the art would have appreciated the addition of titanium dioxide to the thermoplastic material would result in a workpiece having a whitish hue. It is inherent

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the titanium dioxide pigment has a reflectance of 2-2.8 as claimed because titanium oxide is the same pigment material used by the applicant as disclosed in the examples in the applicant's specification. Note that one is not picking and choosing here but merely picking the use of the specific colorant in the operation. In the event that titanium dioxide does not inherently have a reflectance of 2-2.8, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Joachimi by using a pigment with a relatively low reflectance, i.e. 2-2.8 reflectance so that the laser energy could be efficiently transmitted to the contacting surface without having a large portion of the laser energy lost due to reflection of the energy off of the pigment materials.

With regard to claim 2, Joachimi discloses both of the molded parts can be formed of the same composition.

With regard to claim 4, it is inherent the laser-transparent part of Joachimi will have reflectance of 1.5 to 1.8 because Joachimi discloses using the same parts by weight of thermoplastic and pigment, and the same pigment material as the applicant.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, 5, 7, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Joachimi in view of Sallavanti et al. [US2002/0124952].

Joachimi discloses a method of laser welding and composition of the materials laser welded. Applicant is referred to paragraph 5 for a detailed discussion of Joachimi. Joachimi discloses the laser light has a wavelength of 700-1200nm. Joachimi discloses one of the resin parts is transparent to laser light and the other is absorbent to laser light having a wavelength of 700-1200nm. Joachimi does not disclose the laser absorptive laser formed on the laser absorbent part.

Sallavanti discloses a transmission laser welding. The method comprises forming a laser transparent part and a laser absorbent part. Sallavanti discloses the laser absorbent part can be formed by incorporating an absorbent die onto the surface of a substrate by insert mold, painting, printing or other known method. Sallavanti also discloses it was known to form the absorbent part with the die incorporated into the entire part.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Joachimi by using any one of the absorbent die introducing methods as taught by Sallavanti in order to make sure the contacting surface between the parts can be heated by laser light. One of ordinary skill in the art would have readily appreciated that the die introducing methods of Sallavanti are functional equivalents that could be readily substituted for each other and achieve the same desired results.

With regard to claim 5, Joachimi discloses there should be no or only a slight color and surface texture difference between the molded parts.

With regard to claim 7, Sallavanti discloses the absorbent die can be applied as paint or an ink.

With regard to claim 9, Sallavanti discloses the absorbent die can be incorporated into a thin film that is applied to the area between the molded parts to be welded together.

With regard to claim 10, Joachimi discloses the molded parts can comprise the pigment nigrosine and that carbon black is a well known and cheap alternative for a laser absorbent, even though it is not preferred by Joachimi.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joachimi, Sallavanti and further in view of Merdan et al. [US6764710].

Joachimi as modified discloses a method of laser welding and composition of the materials laser welded. Applicant is referred to paragraph 7 for a detailed discussion of Joachimi as modified. Sallavanti teaches applying the absorbent die as a paint or ink but does not disclose using an alcohol or glycol solvent.

Merdan discloses a method of laser exposing joined work pieces. The method comprises applying a light emitting die to the area to be exposed to the laser. Merdan discloses the die can be applied by painting or spraying on the surface of the work piece. The die is dissolved into a solution with a solvent such as an alcohol solvent or glycol solvent. The use of alcohol or glycol solvent is based on the solubility of the die and the affect on the work pieces.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Joachimi by using an alcohol or glycol solvent for the

paint or ink as taught by Merdan in order to dissolve the die completely so that the ink or paint can be applied as a smooth layer as the use of painting to provide the dye was clearly suggested by Sallavanti.

9. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joachimi in view of Baumann et al. [US7148286].

Joachimi discloses a method of laser welding and composition of the materials laser welded. Applicant is referred to paragraph 5 for a detailed discussion of Joachimi. Joachimi is silent as to the particle size of the titanium dioxide particles.

Baumann discloses a composition of polyamide and titanium dioxide that is exposed to a laser source. Baumann discloses the titanium dioxide particles are preferably from 10 to 750nm so that the titanium dioxide particles could be mixed with greater uniformity in the polyamide.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Joachimi by using titanium dioxide particles with a size of 10-750nm as taught by Baumann in order to improve uniformity of the titanium dioxide in the thermoplastic part.

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Joachimi in view of Muellich [US5893959].

Joachimi discloses a method of laser welding and composition of the materials laser welded. Applicant is referred to paragraph 5 for a detailed discussion of Joachimi. Joachimi discloses transmission laser welding but is silent as to scanning the laser along a seam or weld line.



Muellich discloses a method of transmission welding. The method comprises exposing a laser through a laser transparent work piece onto a laser absorbent work piece. As shown in Figure 1, the laser is moved along a seam or weld line to create a continuous weld.

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the method of Joachimi by scanning the laser along a weld line or seam as taught by Muellich in order to create an air tight weld between the two resin parts. As to the energy quantity, the output power, scan speed and transmittance are well known result affecting variables. It would have been well within the purview of one of ordinary skill in the art at the time of invention to optimize the result affecting variables in order to efficiently create a weld of sufficient strength.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL MCNALLY whose telephone number is (571)272-2685. The examiner can normally be reached on Monday - Friday 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel McNally/  
Examiner, Art Unit 1791

/Jeff H. Aftergut/  
Primary Examiner, Art Unit 1791

/DPM/  
March 4, 2008

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